

INJURY - A MAJOR PUBLIC HEALTH PROBLEM IN HAWAII

Injuries are responsible for more deaths of children and young adults in Hawaii from age one through age 40 years than all other causes combined, including heart disease, stroke and cancer. Among residents of all ages, injury is the fourth leading cause of death, behind only heart disease and cancer, but ahead of cerebrovascular disease, influenza and pneumonia, and diabetes. Although the greatest impact of injury is in human suffering, the financial cost is staggering – in 2016, medical treatment for injuries generated nearly \$455 million in hospital charges in Hawaii.

Mortality statistics do not convey the full extent of the injury problem, however. Fatal injuries represent less than 1% of all injuries requiring medical attention. Although fatal injuries are the most severe, the great majority of injuries are non-fatal, and in some respects, have much greater public health implications. On an average week in Hawaii 15 residents die from an injury, another 103 are hospitalized and another 1,640 are treated in emergency departments.

Injuries, however, are not accidents. They are neither random nor uncontrollable. Injuries are understandable, predictable and preventable. The first step in understanding and preventing injuries is to collect and analyze data. Answers to questions like “How serious is the problem?”, “Who has the problem?” and “What are the circumstances under which it occurs?” help determine the answers to questions such as “What causes it?” and “What can we do about it?”

Ten leading causes of death among Hawaii residents, by age group, 2014-2018

	<1	1-14y	15-24y	25-34y	35-44y	45-54y	55-64y	65+y	all ages
1	Perinatal conditions 268	Unintentional injuries 43	Unintentional injuries 162	Unintentional injuries 273	Unintentional injuries 266	Malignant neoplasm 723	Malignant neoplasm 2,178	Heart disease 9,961	Heart disease 12,525
2	Congenital anomalies 70	Malignant neoplasm 28	Suicide 143	Suicide 188	Malignant neoplasm 220	Heart disease 698	Heart disease 1,520	Malignant neoplasm 8,716	Malignant neoplasm 11,971
3	Sudden infant death synd. 23	Congenital anomalies 12	Malignant neoplasm 32	Heart disease 83	Heart disease 218	Unintentional injuries 430	Unintentional injuries 460	CVD 3,012	CVD 3,567
4	Unintentional injuries 17	Homicide 8	Heart disease 22	Malignant neoplasm 71	Suicide 147	CVD 155	CVD 316	Influenza and pneumonia 2,390	Unintentional injuries 2,729
5	Heart disease 12	Heart disease 7	Homicide 17	Homicide 24	CVD 53	Suicide 147	Diabetes mellitus 224	Alzheimer's disease 2,109	Influenza and pneumonia 2,660
6	Other resp. diseases 10	Oth. infectious diseases 7	Influenza and pneumonia 7	Injuries of unk. intent 19	Homicide 44	Liver disease and cirrhosis 113	Liver disease and cirrhosis 196	Chronic lower resp. diseases 1,494	Alzheimer's disease 2,121
7	Septicemia 8	Suicide 5	Congenital anomalies 7	CVD 18	Liver disease and cirrhosis 33	Diabetes mellitus 87	Chronic lower resp. diseases 188	Unintentional injuries 1,077	Chronic lower resp. diseases 1,735
8	Infectious diseases 5	Oth. Intestine. Infections <5	CVD 6	Liver disease and cirrhosis 15	Diabetes mellitus 30	Influenza and pneumonia 59	Influenza and pneumonia 171	Diabetes mellitus 1,061	Diabetes mellitus 1,420
9	Homicide <5	Perinatal conditions <5	Diabetes mellitus 5	Diabetes mellitus 13	Injuries of unk. intent 19	Septicemia 47	Suicide 161	Nephritis, nephrotic synd 852	Nephritis, nephrotic synd 1,014
10	CVD <5	CVD <5	Injuries of unk. intent <5	Influenza and pneumonia 11	Influenza and pneumonia 17	Nephritis, nephrotic synd 40	Nephritis, nephrotic synd 104	Parkinson's disease 691	Suicide 958

Deaths grouped as recommended by National Center for Health Statistics
(http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_15.pdf).

**Ten leading causes of injury-related deaths among Hawaii residents,
by age group, 2014-2018**

	infant-14y (80 deaths)	15-24y (326)	25-34y (511)	35-44y (480)	45-64y (1,317)	65+y (1,273)	all ages (3,987)
1	Drowning 17	Suicide 143	Suicide 188	Suicide 147	Poisoning 479	Falls 635	Suicide 958
2	Suffocation 15	MVC, occupant 57	Poisoning 82	Poisoning 135	Suicide 308	Suicide 167	Poisoning 791
3	MVC, pedestrian 12	Poisoning 34	MVC, occupant 58	Homicide 44	Falls 98	Suffocation 94	Falls 776
4	Homicide 12	MVC, motorcyclist 20	MVC, motorcyclist 41	MVC, occupant 33	Drowning 80	MVC, pedestrian 64	MVC, occupant 249
5	Suicide 5	Drowning 17	Drowning 31	Drowning 21	Homicide 56	Poisoning 59	Drowning 217
6	MVC, occupant <5	Homicide 17	Homicide 24	Injuries of unk. intent 19	MVC, pedestrian 54	MVC, occupant 52	Homicide 169
7	possible Homicide <5	Falls 12	Injuries of unk. intent 19	MVC, motorcyclist 19	Injuries of unk. intent 54	Drowning 51	MVC, pedestrian 167
8	Fires/burns <5	MVC, pedestrian 12	Aircraft crashes 15	Falls 16	MVC, occupant 45	Fires/burns 17	Suffocation 136
9	Poisoning <5	Injuries of unk. intent <5	Falls 14	MVC, pedestrian 15	MVC, motorcyclist 35	Homicide 16	MVC, motorcyclist 124
10	Struck by <5	Aircraft crashes <5	MVC, pedestrian 9	MVC, bicyclist <5	Suffocation 20	Injuries of unk. intent 13	Injuries of unk. intent 112

Table notes: MVC is abbreviation for motor vehicle crash. All injury categories are unintentional in terms of intent, except for Homicide, Suicide, and Injuries of unknown intent. The all ages column includes 1 death for which decedent age was not known.

Leading Causes of Injury Mortality and Morbidity among Hawaii residents¹,

(Average annual counts over the 2013-2017 period.

Non-fatal injury counts for 2017 projected from data through September of that year.)

	Death Certificates (fatal)			Hospital Admission Records (non-fatal)			Emergency Department Records (non-fatal)		
	Cause ²	# ³	%	Cause	# ⁴	%	Cause	# ⁵	%
1	Suicide	185	25%	Falls	2,592	53%	Falls	24,789	31%
2	Falls	142	19%	Suicide	343	7%	Striking ⁶	13,414	17%
3	Poisoning	136	18%	Car occupant	314	6%	Cut/pierce	7,548	9%
4	Car occupant	49	7%	Assault	258	5%	Overexertion ⁷	5,485	7%
5	Drowning	39	5%	Motorcyclist	249	5%	Natural/ environmental ⁸	4,248	5%
6	Pedestrian	31	4%	Poisoning	221	5%	Assault	3,951	5%
7	Homicide	30	4%	Striking ⁶	161	3%	Car occupant	3,778	5%
8	Suffocation	27	4%	Pedestrian	115	2%	Fire/burn	1,096	1%
9	Motorcyclist	24	3%	Fire/burn	66	2%	Motorcyclist	1,037	1%
10	Injuries of undet. Intent	23	3%	Bicyclist	61	1%	Poisoning	1,005	1%
	<i>all other</i>	56	8%	<i>all other</i>	127	3%	<i>all other</i>	9,983	12%
	Annual total	741		Annual total	4,961		Annual total	82,392	

¹ Non-residents comprised 10% of the victims killed by injuries in the state, 9% of those hospitalized, and 9% of those treated in emergency departments.

² All injury causes are unintentional or "accidental" in intent, except for those labelled suicide, assault, and undetermined intent.

³ Average annual number of deaths, from 2013-2017 death certificates. For underlying cause of death in the ICD-10 code series: V01-Y36, Y85-Y87, Y89, and U01-U03.

⁴ Average annual number of injury-related hospitalizations, from 2013-9/2017 records. For principle diagnosis in ICD-9CM code series of 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85, and ICD-10CM series S through T78 (with some exceptions). Annual total includes 7% of records that did not have external cause of injury codes.

⁵ Average annual number of injury-related emergency department visits, from 2013-9/2017 records. For principle diagnosis in ICD-9CM code series of 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85, and ICD-10CM series S through T78 (with some exceptions). Annual total includes 8% of records that did not have external cause of injury codes.

⁶ Most of these patients were "struck accidentally by objects or persons", or less commonly "struck accidentally by falling object".

⁷ Most of these injuries were related to "Overexertion...from sudden strenuous movements".

⁸ Nearly all of these visits were related to the bites or venom of animals, most specifically (in order): dog bites, centipedes, bee and wasp stings, and venomous marine animals.